

Title (en)
WHITE LIGHT EQUIPMENT

Title (de)
WEISSLICHTEQUIPMENT

Title (fr)
ÉQUIPEMENT ÉMETTEUR DE LUMIÈRE BLANCHE

Publication
EP 4258819 A3 20240124 (EN)

Application
EP 23177418 A 20110623

Priority
• JP 2011095906 A 20110422
• JP 2011064405 W 20110623
• EP 21160434 A 20110623
• EP 17187460 A 20110623
• EP 11863791 A 20110623

Abstract (en)
The present invention provides a white light source comprising a blue light emitting LED having a light emission peak of 421 to 490 nm and satisfying a relational equation of $-0.2 \leq P\lambda \times V\lambda / P\lambda_{\max 1} \times V\lambda_{\max 1} - B\lambda \times V\lambda / B\lambda_{\max 2} \times V\lambda_{\max 2} \leq +0.2$, assuming that: a light emission spectrum of the white light source is $P(\lambda)$; a light emission spectrum of black-body radiation having a same color temperature as that of the white light source is $B(\lambda)$; a spectrum of a spectral luminous efficiency is $V(\lambda)$; a wavelength at which $P(\lambda) \times V(\lambda)$ becomes largest is $\lambda_{\max 1}$; and a wavelength at which $B(\lambda) \times V(\lambda)$ becomes largest is $\lambda_{\max 2}$. According to the above white light source, there can be provided a white light source capable of reproducing the same light emission spectrum as that of natural light.

IPC 8 full level
H01L 33/50 (2010.01); **F21K 99/00** (2016.01); **H05B 45/00** (2022.01); **H05B 45/20** (2020.01); **F21K 9/23** (2016.01); **F21Y 113/00** (2016.01); **F21Y 113/13** (2016.01); **F21Y 113/17** (2016.01); **F21Y 115/10** (2016.01); **H01L 25/075** (2006.01)

CPC (source: CN EP US)
F21K 9/23 (2016.07 - CN EP US); **H01L 33/504** (2013.01 - EP); **H05B 45/00** (2020.01 - EP US); **H05B 45/20** (2020.01 - EP US); **F21Y 2101/00** (2013.01 - CN); **F21Y 2113/13** (2016.07 - EP US); **F21Y 2113/17** (2016.07 - EP US); **F21Y 2115/10** (2016.07 - EP US); **H01L 25/0753** (2013.01 - CN EP US); **H01L 2924/0002** (2013.01 - EP US)

Citation (search report)
• [Y] EP 2164301 A2 20100317 - ADVANCED OPTOELECTRONIC TECH [TW]
• [A] WO 2006023100 A1 20060302 - GELCORE LLC [US]
• [Y] JP 2008198951 A 20080828 - NITTO DENKO CORP
• [A] JP 2007165508 A 20070628 - SUMITOMO OSAKA CEMENT CO LTD
• [A] WO 2010119800 A1 20101021 - NIPPON CHEMICAL IND [JP], et al
• [A] DE 102008050643 A1 20100408 - OSRAM OPTO SEMICONDUCTORS GMBH [DE]
• [A] WO 2010002221 A2 20100107 - SAMSUNG LED CO LTD [KR], et al
• [T] CN 106449626 A 20170222 - SHINEON (BEIJING) TECH CO LTD
• [A] US 2010157583 A1 20100624 - NAKAJIMA TOSHIYUKI [JP]
• [A] US 2009225564 A1 20090910 - MINODA TAKAKO [JP], et al
• [A] JP 2007299714 A 20071115 - OSRAM MELCO LTD
• [A] US 2010258828 A1 20101014 - RAMER DAVID P [US], et al
• [A] US 2008259589 A1 20081023 - VAN DE VEN ANTONY PAUL [CN]
• [A] WO 2009029575 A1 20090305 - PHOTONIC DEVELOPMENTS LLC [US], et al

Designated contracting state (EPC)
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

DOCDB simple family (publication)
EP 2701213 A1 20140226; **EP 2701213 A4 20141022**; **EP 2701213 B1 20200527**; **EP 2701213 B8 20201104**; CN 103493226 A 20140101; CN 103493226 B 20160928; EP 3270425 A1 20180117; EP 3848985 A1 20210714; EP 3848985 A8 20210825; EP 3848985 B1 20230607; EP 3848985 C0 20230607; EP 4258819 A2 20231011; EP 4258819 A3 20240124; JP 5770269 B2 20150826; JP WO2012144087 A1 20140728; US 2014036499 A1 20140206; US 9109762 B2 20150818; WO 2012144087 A1 20121026

DOCDB simple family (application)
EP 11863791 A 20110623; CN 201180070338 A 20110623; EP 17187460 A 20110623; EP 21160434 A 20110623; EP 23177418 A 20110623; JP 2011064405 W 20110623; JP 2013510842 A 20110623; US 201114110830 A 20110623